DOCUMENT RESUME

ED 246 061 TM 840 317

AUTHOR Baker, Jean; Wongbundhit, Yuwadee
TITLE The Use of Rasch Based Scale in a Criterion Referenced Evaluation for the State Student Compensatory Education Program in Dade County, Florida Public Schools.
PUB DATE Apr 84
NOTE 21p.; Paper presented at the Annual Meeting of the American Educational Research Association (68th, New Orleans, LA, April 23-27, 1984).
PUB TYPE Speeches/Conference Papers (150) -- Reports - Research/Technical (143)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Academic Achievement; Basic Skills; Compensatory Education; *Criterion Referenced Tests; Elementary Secondary Education; *Equated Scores; Item Analysis; Latent Trait Theory; *State Programs; Statistical Analysis; *Testing Programs
IDENTIFIERS BICAL Computer Program; *Rasch Model

ABSTRACT

This study was designed to illustrate the use of the Rasch model procedure to equate the Dade County Compensatory Education Skills Test (DCCEST) to the State Student Assessment Test (SSAT) for both mathematics skills and communications skills. The SSAT was a test developed by the Florida State Department of Education to measure students' level of mastery of specific basic skills in mathematics and communication. It is administered annually to Florida students. The DCCEST was developed by the Dade County Public Schools Testing Department to parallel the SSAT. It was designed to provide a valid measure of the degree of mastery achieved by students who had been given instruction in specific skills. The analysis was conducted using the equating procedure of the Rasch model. Item difficulty and parameter estimates were computed for the SSAT and the DCCEST. The BICAL computer program was used to compute the parameters. This procedure was useful as an empirical study of the use of the Rasch model in a criterion referenced evaluation. It was a cost effective and valid measurement of achievement. (DWH)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED246061

THE USE OF RASCH BASED SCALE IN A CRITERION REFERENCED EVALUATION FOR THE STATE STUDENT COMPENSATORY EDUCATION PROGRAM IN DADE COUNTY, FLORIDA PUBLIC SCHOOLS

U.S. DEPARTMENT OF EDUCATION
NATIONAL INSTITUTE OF EDUCATION
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

X This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official NIE position or policy.

Jean Baker
Yuwadee Wongbundhit
Dade County Public Schools

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

J. Baker

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

Tm 810 317

Paper presented at the annual meeting of
the American Educational Research Association

New Orleans, Louisiana
April 1984

The Use of Rasch Based Scale in a Criterion Referenced Evaluation
for the
State Student Compensatory Education Program
In Dade County, Florida Public Schools

SUMMARY

Overview

Since 1977, the Florida Legislature has appropriated funds each year under the Compensatory Education Act for the provision of supplementary instructional services to low achieving students in grades K through 12. The release of funds to each county is contingent upon submission of a plan that meets the requirements of the statute and the State of Florida Department of Education rules.

The instructional activities planned must be related exclusively to the classroom teaching of the basic skills and must be in addition to, not in place of, the instruction in the basic skills which students would normally receive from locally funded personnel. This instruction in basic skills is to be directed toward the mastery of state minimum performance standards and district student performance objectives.

Dade County proposed to provide two programs: (1) a program of basic skills remediation for all grade K-6 students and those 7-10 students attending schools not receiving Chapter I services, who scored in the first and second stanines on standardized tests of those skills and (2) a program of tutorial instruction for all students in grades 11 and 12 who scored in stanines one or two on standardized tests and had not mastered all of the minimum performance standards required by the State as measured by the State Student Assessment Test (SSAT) Part I.

A criterion referenced evaluation is one which requires a procedure to assess a program by using pre-set criteria from a reference scale. The State requires that the instructional intent of the program be focused on the mastery of the basic skills which the State assesses at the beginning of each year in grades 3, 5, and 8. These results of the State test serve as a pretest for students in the State Compensatory Education Program.

There were no commercially developed tests which the county felt were adequate to provide a valid post measure of student mastery of the skills specified by the State. In order to provide a valid measure of the degree of mastery achieved by the students who received instruction in the specific skills, the testing department of Dade County Public Schools developed criterion referenced tests, the Dade County Compensatory Education Skills Test (DCCEST). The intent of DCCEST was to be parallel to the State test.

The locally developed tests are used as the pre and post measures in grades 2, 4, 6, 7 and 9. For grades 3, 5 and 8, the State tests are used as the pre measure and the local developments are used as the post measure. In grade 10, the DCCEST is used as the pre measure and the SSAT grade 10 is used as a post measure. Table 1, which is attached, shows a summary of the measurement instruments used in the assessment of the program.

TABLE 1

A SUMMARY OF THE MEASUREMENT
INSTRUMENTS USED IN THE ASSESSMENT OF THE
STATE STUDENT COMPENSATORY EDUCATION PROGRAM
IN DADE COUNTY, FLORIDA PUBLIC SCHOOLS

GRADE	REMEDIATION SELECTION INSTRUMENT	REMEDIATION SELECTION CRITERION	PRE-MEASUREMENT INSTRUMENT	POST-MEASUREMENT INSTRUMENT	PROGRAM OBJECTIVE[3]
2	SESAT[1]	Stanines 1-2	DCCEST[2]	DCCEST	47% (2/3 of 70%)
3	SAT[4]	Stanines 1-2	SSAT[5]	DCCEST	70% (3/3 of 70%)
4	SAT	Stanines 1-2	DCCEST	DCCEST	56% (4/5 of 70%)
5	SAT	Stanines 1-2	SSAT	DCCEST	70% (5/5 of 70%)
6	SAT	Stanines 1-2	DCCEST	DCCEST	84% (6/5 of 70%)
7	SAT	Stanines 1-2	DCCEST	DCCEST	61% (7/8 of 70%)
8	SAT	Stanines 1-2	SSAT	DCCEST	70% (8/8 of 70%)
9	SAT	Stanines 1-2	DCCEST	DCCEST	63% (9/10 of 70%)
10	SAT	Stanines 1-2	DCCEST	SSAT	70% (10/10 of 70%)

[1]SESAT - Stanford Early School Achievement Test

[2]DCCEST - Dade County Compensatory Education Skills Test, referenced to State standards

[3]Minimum performance requirements for students in grades 2, (4 and 6), 7 and 9 are prorated to the 70% State minimum level required of students in grades 3, 5, 8 and 10, respectively.

[4]SAT - Stanford Achievement Test

[5]SSAT - State Student Assessment Test, referenced to State standards

OEA: 4/18/84
ML/CHART RASH.1 - Comp Ed

The purpose of the study is to illustrate the use of the Rasch model procedure to equate the DCCEST to the SSAT for both mathematics skills and communication skills.

Sample

A representative sample of eighth grade students was selected to participate in the testing procedure.

1. Mathematics skills: 237 students took the mathematics skills subtest of both the DCCEST and the SSAT, grade 8.

2. Communication skills: 225 students took the communication skills subtest of both the DCCEST and the SSAT, grade 8.

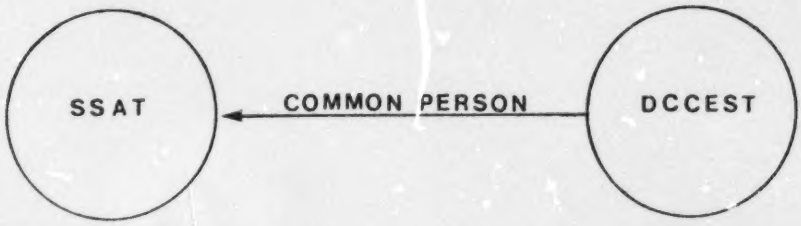
Instrument Description

1. The State Student Assessment TEST (SSAT), grade 8, is a test developed by the Florida State Department of Education and administered each year to students in grade 8 to measure their level of mastery of pre-determined eighth grade basic skills. The mathematics skill subtest consists of 114 items and the communication skill subtest consists of 129 items.

2. The Dade County Compensatory Education Skills Test (DCCEST) was developed by the Testing Department of Dade County Public Schools. The intent of the test structure was to parallel the SSAT. The test was developed according to State specifications which stated requirements for stimulus and response attributes including vocabulary and sentence length controls. The number of items per skill was proportional to the number of items per skill on the SSAT. The mathematics skills subtest consists of 70 items and the communication skills subtest consists of 78 items.

Equating Model and Design

1. The common person equating procedure of the Rasch model was used in this analysis.



2. Item difficulty and ability parameter estimates were computed for the SSAT and for the DCCEST. A BICAL computer program was used to compute these parameters.

3. The equating assumption when two tests are given to a single group is:

   [1]"Any observed difference in a given individual's scores on a pair of supposedly parallel forms is a function of the difference in difficulty between the two forms. (p4)"

Equating Procedure

1. Persons who obtained a perfect score were not included in the sample.

Table 2

Skills test	Initial Sample	Perfect Scores		Final Sample
		SSAT	DCCEST	
Mathematics	237	9	3	225
Communication	225	4	2	219

2. Item difficulties and ability parameter estimates were computed for the SSAT and the DCCEST using BICAL in two separate computer runs.

Table 3

Tests	Average Mean Ability estimates	
	Mathematics	Communication
SSAT	2.70 (1.08)	3.12 (.89)
DCCEST	1.73 (1.27)	2.16 (.87)
Additive constant	.97	.96

3. Ability estimates of the DCCEST were adjusted to the same scale of ability estimates of the SSAT.

4. The DCCEST raw scores were equated to the SSAT raw scores.

The results of the analyses are shown in attached Tables 4-9.

Educational Implication

The study can be used as an empirical study of the use of the Rasch model in a criterion referenced evaluation. The procedure is cost effective and provides a valid measure of achievement not otherwise available.

---

[1]Benjamin Wright, "An Equating Study for the PREP Program of the College of Physicians of Philadelphia", Research Memorandum No 27, December 1977.

OEA: 04/18/84
Rasch Based Scale - EVALTN/AWOJ

TABLE 4

Raw Score, Rasch Ability Estimate, and Rasch Adjusted Ability Estimate of the DCCEST, Mathematics Skills, Grade 8

RAW SCORE	ABILITY	ADJUSTED ABILITY
69	4.84	5.810
68	4.05	5.020
67	3.58	4.550
66	3.23	4.200
65	2.95	3.920
64	2.72	3.690
63	2.53	3.500
62	2.35	3.320
61	2.20	3.170
60	2.06	3.030
59	1.93	2.900
58	1.81	2.780
57	1.69	2.660
56	1.59	2.560
55	1.48	2.450
54	1.39	2.360
53	1.30	2.270
52	1.21	2.180
51	1.12	2.090
50	1.04	2.010
49	0.96	1.930
48	0.88	1.850
47	0.80	1.770
46	0.72	1.690
45	0.65	1.620
44	0.58	1.550
43	0.51	1.480
42	0.44	1.410
41	0.37	1.340
40	0.30	1.270
39	0.23	1.200
38	0.16	1.130
37	0.10	1.070
36	0.03	1.000
35	-0.04	0.930
34	-0.10	0.870
33	-0.17	0.800
32	-0.24	0.730
31	-0.30	0.670
30	-0.37	0.600
29	-0.44	0.530
28	-0.51	0.460
27	-0.58	0.390
26	-0.64	0.330
25	-0.72	0.250

TABLE 4 (Continued)

Raw Score, Rasch Ability Estimate, and Rasch Adjusted Ability Estimate of the DCCEST, Mathematics Skills, Grade 8

RAW SCORE	ABILITY	ADJUSTED ABILITY
24	-0.79	0.180
23	-0.86	0.110
22	-0.93	0.040
21	-1.01	-0.040
20	-1.09	-0.120
19	-1.17	-0.200
18	-1.25	-0.280
17	-1.33	-0.360
16	-1.42	-0.450
15	-1.51	-0.540
14	-1.61	-0.640
13	-1.71	-0.740
12	-1.81	-0.840
11	-1.93	-0.960
10	-2.05	-1.080
9	-2.18	-1.210
8	-2.32	-1.350
7	-2.48	-1.510
6	-2.65	-1.680
5	-2.86	-1.890
4	-3.10	-2.130
3	-3.41	-2.440
2	-3.84	-2.870
1	-4.55	-3.580

TABLE 5

Ras Score and Rasch Ability Estimate of
the SSAT, Mathematics Skills, Grade 8

RAW SCORE	ABILITY
113	5.16
112	4.46
111	4.04
110	3.73
109	3.49
108	3.29
107	3.12
106	2.97
105	2.84
104	2.71
103	2.60
102	2.50
101	2.40
100	2.31
99	2.22
98	2.14
97	2.06
96	1.98
95	1.91
94	1.84
93	1.77
92	1.71
91	1.64
90	1.58
89	1.52
88	1.46
87	1.41
86	1.35
85	1.30
84	1.24
83	1.19
82	1.14
81	1.09
80	1.04
79	0.99
78	0.94
77	0.89
76	0.85
75	0.80
74	0.76
73	0.71
72	0.66
71	0.62
70	0.58
69	0.53

TABLE 5 (Continued)

Raw Score and Rasch Ability Estimate of
the SSAT, Mathematics Skills, Grade 8

RAW SCORE	ABILITY
68	0.49
67	0.44
66	0.40
65	0.36
64	0.31
63	0.27
62	0.23
61	0.19
60	0.14
59	0.10
58	0.06
57	0.02
56	-0.02
55	-0.07
54	-0.11
53	-0.15
52	-0.19
51	-0.24
50	-0.28
49	-0.32
48	-0.37
47	-0.41
46	-0.45
45	-0.50
44	-0.54
43	-0.59
42	-0.63
41	-0.68
40	-0.72
39	-0.77
38	-0.82
37	-0.87
36	-0.92
35	-0.96
34	-1.01
33	-1.07
32	-1.12
31	-1.17
30	-1.22
29	-1.28
28	-1.33
27	-1.39
26	-1.45
25	-1.51
24	-1.57
23	-1.64

TABLE 5 (Continued)

Raw Score and Rasch Ability Estimate of
the SSAT, Mathematics Skills, Grade 8

RAW SCORE	ABILITY
22	-1.70
21	-1.77
20	-1.84
19	-1.91
18	-1.99
17	-2.07
16	-2.15
15	-2.24
14	-2.33
13	-2.42
12	-2.53
11	-2.64
10	-2.76
9	-2.88
8	-3.03
7	-3.18
6	-3.36
5	-3.57
4	-3.81
3	-4.13
2	-4.56
1	-5.27

TABLE 6

Raw Score, Rasch Ability Estimate, and Rasch Adjusted Ability Estimate of the DCCEST, Communication Skills, Grade 8

RAW SCORE	ABILITY	ADJUSTED ABILITY
77	4.97	5.930
76	4.22	5.180
75	3.76	4.720
74	3.43	4.390
73	3.16	4.120
72	2.94	3.900
71	2.75	3.710
70	2.58	3.540
69	2.42	3.380
68	2.28	3.240
67	2.16	3.120
66	2.04	3.000
65	1.92	2.880
64	1.82	2.780
63	1.72	2.680
62	1.62	2.580
61	1.53	2.490
60	1.44	2.400
59	1.36	2.320
58	1.28	2.240
57	1.20	2.160
56	1.12	2.080
55	1.05	2.010
54	0.97	1.930
53	0.90	1.860
52	0.83	1.790
51	0.76	1.720
50	0.69	1.650
49	0.63	1.590
48	0.56	1.520
47	0.50	1.460
46	0.43	1.390
45	0.37	1.330
44	0.30	1.260
43	0.24	1.200
42	0.18	1.140
41	0.12	1.080
40	0.05	1.010
39	-0.01	0.950
38	-0.07	0.890
37	-0.13	0.830
36	-0.19	0.770
35	-0.26	0.700
34	-0.32	0.640
33	-0.38	0.580
32	-0.44	0.520

TABLE 6 (Continued)

Raw Score, Rasch Ability Estimate, and Rasch Adjusted Ability Estimate of the DCCEST, Communication Skills, Grade 8

RAW SCORE	ABILITY	ADJUSTED ABILITY
31	-0.51	0.450
30	-0.57	0.390
29	-0.64	0.320
28	-0.70	0.260
27	-0.77	0.190
26	-0.84	0.120
25	-0.91	0.050
24	-0.98	-0.020
23	-1.05	-0.090
22	-1.13	-0.170
21	-1.20	-0.240
20	-1.28	-0.320
19	-1.36	-0.400
18	-1.44	-0.480
17	-1.53	-0.570
16	-1.62	-0.660
15	-1.72	-0.760
14	-1.81	-0.850
13	-1.92	-0.960
12	-2.03	-1.070
11	-2.15	-1.190
10	-2.27	-1.310
9	-2.41	-1.450
8	-2.56	-1.600
7	-2.73	-1.770
6	-2.92	-1.960
5	-3.14	-2.180
4	-3.41	-2.450
3	-3.74	-2.780
2	-4.20	-3.240
1	-4.95	-3.990

TABLE 7

Ras Score and Rasch Ability Estimate of
the SSAT, Communication Skills, Grade 8

RAW SCORE	ABILITY
128	5.43
127	4.72
126	4.29
125	3.98
124	3.74
123	3.54
122	3.36
121	3.21
120	3.07
119	2.94
118	2.83
117	2.72
116	2.62
115	2.53
114	2.44
113	2.36
112	2.28
111	2.20
110	2.13
109	2.06
108	1.99
107	1.92
106	1.86
105	1.80
104	1.74
103	1.68
102	1.63
101	1.57
100	1.52
99	1.46
98	1.41
97	1.36
96	1.31
95	1.26
94	1.21
93	1.17
92	1.12
91	1.07
90	1.03
89	0.98
88	0.94
87	0.90
86	0.85
85	0.81
84	0.77

TABLE 7 (Continued)

Raw Score and Rasch Ability Estimate of
the SSAT, Communication Skills, Grade 8

RAW SCORE	ABILITY
83	0.73
82	0.69
81	0.64
80	0.60
79	0.56
78	0.52
77	0.48
76	0.44
75	0.40
74	0.36
73	0.32
72	0.28
71	0.25
70	0.21
69	0.17
68	0.13
67	0.09
66	0.05
65	0.01
64	-0.03
63	-0.06
62	-0.10
61	-0.14
60	-0.18
59	-0.22
58	-0.26
57	-0.30
56	-0.34
55	-0.38
54	-0.41
53	-0.45
52	-0.49
51	-0.53
50	-0.57
49	-0.61
48	-0.66
47	-0.70
46	-0.74
45	-0.78
44	-0.82
43	-0.86
42	-0.91
41	-0.95
40	-0.99
39	-1.04
38	-1.08
37	-1.13

TABLE 7 (Continued)

Raw Score and Rasch Ability Estimate of
the SSAT, Communication Skills, Grade 8

RAW SCORE	ABILITY
36	-1.17
35	-1.22
34	-1.27
33	-1.32
32	-1.37
31	-1.42
30	-1.47
29	-1.52
28	-1.57
27	-1.63
26	-1.68
25	-1.74
24	-1.80
23	-1.86
22	-1.92
21	-1.99
20	-2.05
19	-2.12
18	-2.20
17	-2.27
16	-2.35
15	-2.43
14	-2.52
13	-2.61
12	-2.71
11	-2.81
10	-2.93
9	-3.05
8	-3.19
7	-3.34
6	-3.51
5	-3.71
4	-3.95
3	-4.26
2	-4.68
1	-5.39

TABLE 8

GRADE 8 MATHEMATICS SKILLS EQUATED SCORES
BETWEEN DCCEST AND SSAT, OCT 1982

DCCEST	SSAT	DIF1	DIF2	ABST1	ABST2	ADJAB
69	113	0.650	1.350	5.160	4.460	5.810
68	113	0.140	0.560	5.160	4.460	5.020
67	112	0.090	0.510	4.460	4.040	4.550
66	111	0.160	0.470	4.040	3.730	4.200
65	111	0.120	0.190	4.040	3.730	3.920
64	110	0.040	0.200	3.730	3.490	3.690
63	109	0.010	0.210	3.490	3.290	3.500
62	108	0.030	0.200	3.290	3.120	3.320
61	107	0.050	0.200	3.120	2.970	3.170
60	106	0.060	0.190	2.970	2.840	3.030
59	105	0.060	0.190	2.840	2.710	2.900
58	105	0.060	0.070	2.840	2.710	2.780
57	104	0.050	0.060	2.710	2.600	2.660
56	103	0.040	0.060	2.600	2.500	2.560
55	102	0.050	0.050	2.500	2.400	2.450
54	101	0.040	0.050	2.400	2.310	2.360
53	100	0.040	0.050	2.310	2.220	2.270
52	99	0.040	0.040	2.220	2.140	2.180
51	97	0.030	0.110	2.060	1.980	2.090
50	96	0.030	0.100	1.980	1.910	2.010
49	95	0.020	0.090	1.910	1.840	1.930
48	94	0.010	0.080	1.840	1.770	1.850
47	93	0.0	0.060	1.770	1.710	1.770
46	92	0.020	0.050	1.710	1.640	1.690
45	91	0.020	0.040	1.640	1.580	1.620
44	90	0.030	0.030	1.580	1.520	1.550
43	88	0.020	0.070	1.460	1.410	1.480
42	87	0.0	0.060	1.410	1.350	1.410
41	86	0.010	0.040	1.350	1.300	1.340
40	85	0.030	0.030	1.300	1.240	1.270
39	83	0.010	0.060	1.190	1.140	1.200
38	82	0.010	0.040	1.140	1.090	1.130
37	81	0.020	0.030	1.090	1.040	1.070
36	79	0.010	0.060	0.990	0.940	1.000
35	78	0.010	0.040	0.940	0.890	0.930
34	77	0.020	0.020	0.890	0.850	0.870
33	75	0.0	0.040	0.800	0.760	0.800
32	73	0.020	0.070	0.710	0.660	0.730
31	72	0.010	0.050	0.660	0.620	0.670
30	71	0.020	0.020	0.620	0.580	0.600
29	69	0.0	0.040	0.530	0.490	0.530
28	67	0.020	0.060	0.440	0.400	0.460
27	66	0.010	0.030	0.400	0.360	0.390
26	64	0.020	0.060	0.310	0.270	0.330
25	63	0.020	0.020	0.270	0.230	0.250
24	61	0.010	0.040	0.190	0.140	0.180
23	59	0.010	0.050	0.100	0.060	0.110

TABLE 8 (Continued)

GRADE 8 MATHEMATICS SKILLS EQUATED SCORES
BETWEEN DCCEST AND SSAT, OCT 1982

DCCEST	SSAT	DIF1	DIF2	ABST1	ABST2	ADJAB
22	58	0.020	0.020	0.060	0.020	0.040
21	56	0.020	0.030	-0.020	-0.070	-0.040
20	54	0.010	0.030	-0.110	-0.150	-0.120
19	52	0.010	0.040	-0.190	-0.240	-0.200
18	50	0.0	0.040	-0.280	-0.320	-0.280
17	48	0.010	0.050	-0.370	-0.410	-0.360
16	46	0.0	0.050	-0.450	-0.500	-0.450
15	44	0.0	0.050	-0.540	-0.590	-0.540
14	42	0.010	0.040	-0.630	-0.680	-0.640
13	40	0.020	0.030	-0.720	-0.770	-0.740
12	38	0.020	0.030	-0.820	-0.870	-0.840
11	35	0.0	0.050	-0.960	-1.010	-0.960
10	33	0.010	0.040	-1.070	-1.120	-1.080
9	30	0.010	0.070	-1.220	-1.280	-1.210
8	28	0.020	0.040	-1.330	-1.390	-1.350
7	25	0.0	0.060	-1.510	-1.570	-1.510
6	22	0.020	0.090	-1.700	-1.770	-1.680
5	19	0.020	0.100	-1.910	-1.990	-1.890
4	16	0.020	0.110	-2.150	-2.240	-2.130
3	13	0.020	0.090	-2.420	-2.530	-2.440
2	9	0.010	0.160	-2.880	-3.030	-2.870
1	5	0.010	0.230	-3.570	-3.810	-3.580

VARIABLE	DESCRIPTION
DCCEST	DCCEST RAW SCORES
SSAT	SSAT RAW SCORES
ABST1	LOG ABILITY OF SSAT AT ORDER N
ABST2	LOG ABILITY OF SSAT AT ORDER N+1
ADJAB	ADJUSTED ABILITY OF DCCEST
DIF1	ABSOLUTE VALUE OF (ABST1-ADJAB)
DIF2	ABSOLUTE VALUE OF (ABST2-ADJAB)

TABLE 9

GRADE 8 MATHEMATICS SKILLS EQUATED SCORES
BETWEEN DCCEST AND SSAT, OCT 1982

DCCEST	SSAT	DIF1	DIF2	ABST1	ABST2	ADJAB
77	128	0.500	1.210	5.430	4.720	5.930
76	128	0.250	0.460	5.430	4.720	5.180
75	127	0.0	0.430	4.720	4.290	4.720
74	126	0.100	0.410	4.290	3.980	4.390
73	125	0.140	0.380	3.980	3.740	4.120
72	125	0.080	0.160	3.980	3.740	3.900
71	124	0.030	0.170	3.740	3.540	3.710
70	123	0.0	0.180	3.540	3.360	3.540
69	122	0.020	0.170	3.360	3.210	3.380
68	121	0.030	0.170	3.210	3.070	3.240
67	120	0.050	0.180	3.070	2.940	3.120
66	119	0.060	0.170	2.940	2.830	3.000
65	118	0.050	0.160	2.830	2.720	2.880
64	118	0.050	0.060	2.830	2.720	2.780
63	117	0.040	0.060	2.720	2.620	2.680
62	116	0.040	0.050	2.620	2.530	2.580
61	115	0.040	0.050	2.530	2.440	2.490
60	114	0.040	0.040	2.440	2.360	2.400
59	113	0.040	0.040	2.360	2.280	2.320
58	112	0.040	0.040	2.280	2.200	2.240
57	110	0.030	0.100	2.130	2.060	2.160
56	109	0.020	0.090	2.060	1.990	2.080
55	108	0.020	0.090	1.990	1.920	2.010
54	107	0.010	0.070	1.920	1.860	1.930
53	106	0.0	0.060	1.860	1.800	1.860
52	105	0.010	0.050	1.800	1.740	1.790
51	104	0.020	0.040	1.740	1.680	1.720
50	102	0.020	0.080	1.630	1.570	1.650
49	101	0.020	0.070	1.570	1.520	1.590
48	100	0.0	0.060	1.520	1.460	1.520
47	99	0.0	0.050	1.460	1.410	1.460
46	98	0.020	0.030	1.410	1.360	1.390
45	96	0.020	0.070	1.310	1.260	1.330
44	95	0.0	0.050	1.260	1.210	1.260
43	94	0.010	0.030	1.210	1.170	1.200
42	92	0.020	0.070	1.120	1.070	1.140
41	91	0.010	0.050	1.070	1.030	1.080
40	90	0.020	0.030	1.030	0.980	1.010
39	88	0.010	0.050	0.940	0.900	0.950
38	87	0.010	0.040	0.900	0.850	0.890
37	86	0.020	0.020	0.850	0.810	0.830
36	84	0.0	0.040	0.770	0.730	0.770
35	82	0.010	0.060	0.690	0.640	0.700
34	81	0.0	0.040	0.640	0.600	0.640
33	80	0.020	0.020	0.600	0.560	0.580
32	78	0.0	0.040	0.520	0.480	0.520
31	76	0.010	0.050	0.440	0.400	0.450

TABLE 9 (Continued)

GRADE 8 MATHEMATICS SKILLS EQUATED SCORES
BETWEEN DCCEST AND SSAT, OCT 1982

DCCEST	SSAT	DIF1	DIF2	ABST1	ABST2	ADJAB
30	75	0.010	0.030	0.400	0.360	0.390
29	73	0.0	0.040	0.320	0.280	0.320
28	71	0.010	0.050	0.250	0.210	0.260
27	70	0.020	0.020	0.210	0.170	0.190
26	68	0.010	0.030	0.130	0.090	0.120
25	66	0.0	0.040	0.050	0.010	0.050
24	64	0.010	0.040	-0.030	-0.060	-0.020
23	62	0.010	0.050	-0.100	-0.140	-0.090
22	60	0.010	0.050	-0.180	-0.220	-0.170
21	59	0.020	0.020	-0.220	-0.260	-0.240
20	57	0.020	0.020	-0.300	-0.340	-0.320
19	54	0.010	0.050	-0.410	-0.450	-0.400
18	52	0.010	0.050	-0.490	-0.530	-0.480
17	50	0.0	0.040	-0.570	-0.610	-0.570
16	48	0.0	0.040	-0.660	-0.700	-0.660
15	46	0.020	0.020	-0.740	-0.780	-0.760
14	43	0.010	0.060	-0.860	-0.910	-0.850
13	41	0.010	0.030	-0.950	-0.990	-0.960
12	38	0.010	0.060	-1.080	-1.130	-1.070
11	36	0.020	0.030	-1.170	-1.220	-1.190
10	33	0.010	0.060	-1.320	-1.370	-1.310
9	30	0.020	0.070	-1.470	-1.520	-1.450
8	28	0.030	0.030	-1.570	-1.630	-1.600
7	25	0.030	0.030	-1.740	-1.800	-1.770
6	21	0.030	0.090	-1.990	-2.050	-1.960
5	18	0.020	0.090	-2.200	-2.270	-2.180
4	15	0.020	0.070	-2.430	-2.520	-2.450
3	11	0.030	0.150	-2.810	-2.930	-2.780
2	8	0.050	0.100	-3.190	-3.340	-3.240
1	4	0.040	0.270	-3.950	-4.260	-3.990
1	5	0.010	0.230	-3.570	-3.810	-3.580

VARIABLE	DESCRIPTION
DCCEST	DCCEST RAW SCORES
SSAT	SSAT RAW SCORES
ABST1	LOG ABILITY OF SSAT AT ORDER N
ABST2	LOG ABILITY OF SSAT AT ORDER N+1
ADJAB	ADJUSTED ABILITY OF DCCEST
DIF1	ABSOLUTE VALUE OF (ABST1-ADJAB)
DIF2	ABSOLUTE VALUE OF (ABST2-ADJAB)

OEA: 4/18/84
Rasch Based Scale - Evaltn/AWOJ